

## SUAEDA CALCEOLIFORMIS, THE CORRECT NAME FOR SUAEDA DEPRESSA AUCT.

J. MCNEILL, I. J. BASSETT AND C. W. CROMPTON

Most current taxonomic treatments of the genus *Suaeda* (e.g. Fernald 1950; Gleason & Cronquist 1963; Hitchcock & Cronquist 1964; Hopkins 1975) recognize, under the name *S. depressa*, an annual species occurring on saline and alkaline soil from Alaska and Yukon southward, east of the Cascades, to Minnesota and Texas. On seeking to typify the epithet *depressa*, we found that the name is being misapplied, and that this species should be called *S. calceoliformis* (Hooker) Moquin.

*Suaeda depressa* (Pursh) S. Watson in King, Rep. U. S. Geol. Explor. Fortieth Parallel 5: 294. 1871, is based on *Salsola depressa* Pursh, Fl. Amer. Sept. 197. 1814. In publishing *Salsola depressa*, Pursh gives a three-line diagnosis followed by:

*Sueda prostrata*. Pall. illustr. 55. t.47.

On the volcanic plains of the Missouri. Nuttall. ☉.

June. +.

Because the Pallas synonym was based on plants from southern European Russia and Pursh was writing about the North American flora, attention has concentrated, in applying the epithet *depressa*, on the reference to a Nuttall specimen. Hopkins (1975, p. 27) was unable to locate such a specimen, and Nuttall's name is not included by Watson (1874, p. 89) among the many collectors of specimens of *Suaeda depressa*.

The key to understanding Pursh's use of the name rests on the symbol + at the end of the protologue. To quote the words of the Preface (Pursh, 1814, p. xxi): "Those [i.e., species] I have adopted without seeing them myself in either state [i.e., living or as a dried specimen], and which are but few, I have marked (+)." So Pursh says that he never saw a specimen of his *Salsola depressa* but "adopted" the species from Pallas' description and illustration. This is confirmed by a comparison of Pursh's description with Pallas' account. The former comprises Pallas' diagnosis with the addition of a few words from his description (see Appendix). Pursh included the species in his Flora, only because in some

way he had come to believe that, on the plains of the Missouri, Nuttall had collected a specimen referable to *Suaeda prostrata* Pallas. The complicated histories of Nuttall's 1810-1811 collections (Graustein, 1967) and of Pursh's preparation of his Flora (Ewan, 1952) make this quite plausible.

*Salsola depressa* Pursh is, therefore, a substitute name for *Suaeda prostrata* Pallas; it is a legitimate substitution because of the existence of *Salsola prostrata* L. (Sp. Pl. 222. 1753), the basionym of *Kochia prostrata* (L.) Schrader. As a substitution, the type of Pursh's epithet *depressa* is the same as that of Pallas' *prostrata*. Accordingly *Suaeda depressa* (Pursh) S. Watson is a homotypic (nomenclatural or obligate) synonym of *Suaeda prostrata* Pallas. This name applies to Eurasian plants which either represent a saline steppe species closely related to *S. maritima* (L.) Dumort. (Il'in, 1936), or else are included within *S. maritima* subsp. *maritima* (Ball, 1964). Whichever treatment is followed, there is no doubt that the Eurasian plants are not conspecific with the American ones to which the name *S. depressa* has hitherto been applied.

Among earlier botanists, Watson (1871) was not altogether unaware of the questionable application of Pursh's name. He notes that Pursh's description differs from that given by Moquin-Tandon (1849, p. 164) "though both were drawn from Nuttall's specimens." Watson is, of course, wrong in this last regard. However, Moquin-Tandon does indicate in his 1849 account that he had seen a Nuttall specimen with the MS name "*Suaeda plattensis* Nutt." Presumably Moquin's description derives from it, for in 1840, when he had only the literature to guide him, he (rightly) cited *Salsola depressa* Pursh as a synonym of *Suaeda prostrata* Pallas. A Nuttall specimen collected at "R Mts Malta" (possibly Malta, Idaho or more likely an unidentified locality in Wyoming on the River Platte) with the manuscript name *Suaeda plattensis* is housed at BM\*, and is probably the one seen by Moquin-Tandon. It is, in fact, neither *S. prostrata* nor *S. depressa* auct., but is referable to the perennial *S. torreyana* S. Watson, which explains some of the features of Moquin's description. This specimen must, of course, have been collected on Nuttall's 1834 expedition, long after the publication of *Salsola depressa* Pursh.

\*Abbreviations of herbaria follow *Index Herbariorum* ed. 6 (Holmgren & Keuken, 1974).

Selecting the correct specific epithet for the species hitherto called *Suaeda depressa* presents some problems. The next earliest name at specific rank that has been applied to plants of this species is *Chenopodium americanum* Sprengel (Syst. Veg. 1: 922. 1824). After a three-line description applicable to almost any species of *Suaeda*, Sprengel's protologue states: "*Amer. boreal.* (*Salsola salsa* Pursh. Nutt. *depressa* Pursh.)". By implication the synonyms are: (1) *Salsola salsa* sensu Pursh, Fl. Am. Sept. 197. 1814, non L., Sp. Pl. ed. 2. 324. 1762; (2) *Salsola salsa* sensu Nutt., Gen. N. Am. Pl. 1: 199. 1818, non L.; and (3) *Salsola depressa* Pursh, already discussed above. The first of these relates to a Michaux specimen from the mouth of the St. Lawrence River which happens also to be the type of *Suaeda americana* (Pers.) Fernald, although this name does not refer back, either directly or indirectly, to Sprengel's use of the epithet. The second comprises both this element and plants from the western plains. Current treatments recognize these as two species under the names *Suaeda americana* and *S. depressa*. The third synonym is the most critical nomenclaturally. Particularly relevant is the question of whether, in the light of Sprengel's geographic statement ("*Amer. boreal.*"), the citation can be interpreted as excluding the type of *Salsola depressa* Pursh, i.e., excluding *Suaeda prostrata* Pallas. Inasmuch as Sprengel's edition of the *Systema vegetabilium* seeks to enumerate and diagnose all known plant species, it is noteworthy that there is no reference anywhere in the work to *Suaeda prostrata* Pallas, other than this indirect one through *Salsola depressa* Pursh. This is so, even though he accounts for Pallas' other *Suaeda* species, and although Roemer and Schultes in the previous edition of the *Systema vegetabilium* had included this one as a distinct species doubtfully assigned to *Chenopodium*. Whatever one may feel was Sprengel's intention, there is no escape from the fact that he did cite *Salsola depressa* Pursh as a synonym with no explicit or implicit exclusion of its type. As such, under Article 63 of the International Code of Botanical Nomenclature (Stafleu *et al.*, 1972), the name was nomenclaturally superfluous when published and is automatically typified by the type of the epithet which ought to have been adopted under the rules, i.e., one of the two specimens from southern Russia upon which *Suaeda prostrata* Pallas is based.

In passing, it should be noted that even if this were not the case, the existence of *Suaeda americana* (Pers.) Fernald (Rhodora

9: 146. 1907) means that the epithet *americanum* Sprengel would be available in *Suaeda* only if it were typified through the first of its three synonyms. This would provide, as its type, the Michaux specimen, that is also the type of *Salsola salsa* var. *americana* Pers. (Syn. Pl. 1: 296. 1805), the basionym of *Suaeda americana* (Pers.) Fernald, which is otherwise a nomenclaturally distinct use of the epithet. This is an isonym situation somewhat similar to that of *Alsophila kalbreyeri* discussed by Nicolson (1975).

In 1838, in *Flora boreali-americana*, Hooker described a *Chenopodium calceoliforme* on the basis of a Drummond specimen from near Carlton House Fort, (on the North Saskatchewan River, north of Saskatoon, Saskatchewan). On the basis of our examination of type material preserved at K and at NY, this refers to the western plains taxon to which the name *Suaeda depressa* has usually been applied. Its correct name at specific rank is, therefore, *Suaeda calceoliformis* (Hooker) Moquin.

The relevant citations of correct species name and synonyms for the western taxon long known as *S. depressa* are as follows:

***Suaeda calceoliformis*** (Hooker) Moquin, *Chenop. Monogr. Enum.* 128. 1840.

Syn.: *Chenopodium calceoliforme* Hooker, *Fl. Bor.-Am.* 2: 126. 1838.

*Schoberia calceoliformis* (Hooker) Moquin in DC., *Prodr.* 13(2): 166. 1849.

(*Chenopodium americanum* Sprengel in L., *Syst. Veg.* ed. 16. 1: 922. 1825, pro parte minore, typo excl.).

(*Suaeda prostrata* in Moquin, *Chenop. Monogr. Enum.* 130. 1840, pro parte, non (Pallas) Moquin).

(*Suaeda depressa* auct., non (Pursh) S. Watson quoad basionomen).

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## LITERATURE CITED

- BALL, P. W. 1964. *Suaeda*. In: TUTIN, T. G., et al., EDS. *Flora Europaea*. 1: 103-106. University Press, Cambridge.
- EWAN, J. 1952. Frederick Pursh, 1774-1820, and his botanical associates. *Proc. Am. Philos. Soc.* 96: 599-628.
- FERNALD, M. L. 1950. *Gray's manual of botany*. ed. 8. American Book Co., New York. 1632 pp.
- GLEASON, H. A., & A. CRONQUIST. 1963. *Manual of the vascular plants of northeastern United States and adjacent Canada*. Van Nostrand, Princeton, New Jersey. 810 pp.
- GRAUSTEIN, J. E. 1967. *Thomas Nuttall, naturalist; exploration in America 1808-1841*. Harvard Univ. Press, Cambridge, Mass. 481 pp.
- HITCHCOCK, C. L., & A. CRONQUIST. 1964. *Vascular plants of the Pacific northwest*. Part 2: Salicaceae to Saxifragaceae. Univ. Washington Press, Seattle. 597 pp.
- HOLMGREN, P. K., & W. KEUKEN. 1974. *Index herbariorum*. Part I. The herbaria of the world. ed. 6. Oosthoek, Scheltama & Holkema, Utrecht. 397 pp.
- HOPKINS, C. 1975. *A taxonomic revision of North America Suaeda (Chenopodiaceae)*. Ph.D. dissertation, Miami University, Oxford, Ohio. 66 pp. (Xerox University Microfilms, Ann Arbor, Michigan, 1976).
- IL'IN, M. M. 1936. Sem. LIII. *Marevije — Chenopodiaceae* in KOMAROV, V. L. ed., *Flora SSSR*. 6: 2-354. Akademii Nauk SSSR, Moscow & Leningrad.
- MOQUIN-TANDON, A. 1840. *Chenopodearum monographica enumeratio*. P.-J. Loss, Paris. 182 pp.
- . 1849. Ordo CLVII. *Salsolaceae*. In: DE CANDOLLE, ALPH. L.P.P., *Prodromus systematis naturalis regni vegetabilis*. 13(2): 41-219. Masson, Paris.
- NICOLSON, D. H. 1975. Isonyms and pseudo-isonyms: identical combinations with the same type. *Taxon* 24: 461-466.
- PURSH, F. 1814. *Flora americana septentrionalis*. White, Cochrane, London. 751 pp.
- STAFLEU, F. A., et al. 1972. *International code of botanical nomenclature adopted . . .* Seattle, August 1969. Oosthoek and International Association for Plant Taxonomy, Utrecht. 426 pp.
- WATSON, S. 1871. Botany in KING, C., *United States geological exploration of the fortieth parallel*. 5: 1-525. Government Printing Office, Washington.
- . 1874. *Contributions to American botany IV. A revision of the North American Chenopodiaceae*. *Proc. Am. Acad.* 9: 82-126.

BIOSYSTEMATICS RESEARCH INSTITUTE  
AGRICULTURE CANADA  
OTTAWA, CANADA K1A 0C6

## APPENDIX

Pursh's description of *Salsola depressa* (Fl. Am. Sept. 197. 1814) is:

"4. S. herbacea, humifusa, ramosissima; ramulis distichis, foliis succulentis linearibus acutis glabris, floribus axillaribus sessilibus, staminibus exertis."

This can be compared with the diagnosis and selections from the description of *Suaeda prostrata* in Pallas (Ill. Pl. 55. pl 47. 1803) which read as follows:

"S. annua humifusa ramosissima, ramulis distichis, foliis succulentis acutis. . . .  
Folia exigua, succulenta, lineari-acuta, glabra.  
Flores in alis, foliorum (non omnium) sessiles . . .  
. . . ; stamina exserta, . . ."